

DENTINO
JURNAL KEDOKTERAN GIGI
Vol VIII. No 2. September 2023

**ANALYSIS OF SEVEN CASES OF ANGULAR CHEILITIS IN CHILDREN WITH
 BODY MASS INDEX AND BLOOD TEST RESULTS**

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ABSTRACT

Background: Angular cheilitis is an acute or chronic inflammation at the angular of the lip which is characterized with fissures and the cracks. **Objectives:** The aim of this paper was to analyze seven cases of angular cheilitis in children with body mass index and blood test results. **Case:** There were seven children patients taken by their parents came to Baiturrahmah Academic Dental Hospital with a same complaint on a day. They complained about the injury and pain while open the mouth in the angular of the mouth. Intra oral examination showed the different clinical appearance at the angular of the mouth (white or red lesions and fissured or cracked). Body mass index analysis showed all the patients are underweight (9 -14) and mostly of the patients have a hemoglobin less than normal. **Case Management:** Pharmacological management was prescribed multivitamin supplements (vitamin B complex in syrup) and prescribed nystatin topically. One week after first visit, the angular cheilitis lesions has healed **Conclusion:** Low BMI might be the predisposing factor of the diseases.

Keywords: Angular Cheilitis, Blood test, Body mass index

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INTRODUCTION

Dental and oral disease can occur in non-keratinized and keratinized mucosa, it can be symptomatic or asymptomatic, can be painful or not painful, can be benign or malignant. Oral disease can attack all ages including children. One of the disorders in the oral cavity that is often experienced by children is angular cheilitis.¹

One of the normal flora that found in the oral cavity is the Candida fungus. Candida species are normal commensal organisms in the oral cavity and are found in 17-25% in the mouths of healthy people and in all sick people. If there is a disturbance as mentioned above, the Candida fungus can become a pathogen so that Oral Candidiasis occurs. In general, it is known that there are 11 kinds of Candida species and the dominant species found is Candida albicans. One type of candida infection in the oral cavity is angular cheilitis.^{2,3} This situation can occur usually in patients who have a habit of licking their lips or in elderly patients with loose skin on the commissures of the mouth. Also due to the loss of vertical dimension in the lower 1/3 of the face due to the arrangement of the teeth or the installation of bad dentures and wrong occlusion.¹

Angular cheilitis or also called perleche, angular cheilosis and angular stomatitis is a lesion characterized by the presence of fissures, cracks in the corners of the lips, redness, ulceration and accompanied by burning, pain and a feeling of dryness in the corners of the mouth. In severe cases, these fissures may bleed when opening the mouth and form shallow ulcers or crusts.⁴ Angular cheilitis is a common inflammatory skin condition that affects the corners of the mouth. It can cause painful, cracked sores, and is characterized by red, swollen patches in the corners of the mouth where the lips meet and make an angle. Other symptoms may include bleeding, blistering, crustiness, itchiness, and swelling.^{4,5}

The condition can be caused by various factors, including bacterial or fungal infections, poorly fitting dentures or mouth hardware, misaligned teeth or a bite, dietary deficiencies, such as a lack of protein, iron, or B vitamins, medical conditions like anemia, diabetes, skin allergies, immune system deficiencies, or certain cancers, treatment for angular cheilitis depends on the underlying cause and may include: antibiotics, either oral or topical, to treat bacterial infections, dental work to ensure proper fit of dentures or correct misalignment, dietary changes to address

nutritional deficiencies, improved hydration and use of lip balm or emollient ointment, topical antiseptics. It's important to note that angular cheilitis can be chronic for some individuals, requiring ongoing management.⁵⁻⁷

This disease that attacks the corner of the mouth often causes pain where this disorder is caused by a deficiency of vitamin B complex, iron deficiency in the blood, denture sore mouth and several other factors such as breathing through the mouth, wetting the lips with the tongue, and licking the corner of the mouth with the tongue.³

Abnormalities in the oral cavity not only show partial or localized disease but can show manifestations of systemic condition in the body. One example of a disorder that often occurs in the oral cavity in children is angular cheilitis which occurs due to nutritional disorders during growth and development. Angular cheilitis is known to be a symptom of nutritional deficiency which is sometimes found in elementary school-age children.⁸ The aim of this paper is to report seven cases of angular cheilitis in children that came to Rumah Sakit Gigi dan Mulut (RSGM)/Academic Dental Hospital Baiturrahmah on a day due to the low of body mass index BMI.

CASE

On a day, seven children came to RSGM Baiturrahmah with the same complaints, they complain sores on both corners of their mouths and pain when opening their mouths. The individual characteristics of the patients are described in table 1. The age of patient was between 6-13 year's old, and the number of females is higher than male. The weight of patient was between 25-39 kg and the height was between 100-135 cm. The socioeconomic status of parents patients was low.

Table 1. Individual characteristics of patient

Patient	Age (years old)	Sex	Weight (kg)	Height (cm)	Parent's socioeconomic status
1	13	Male	39	130	Low
2	11	Female	25	125	Low
3	6	Female	18	100	Low
4	8	Male	37	130	Low
5	11	Female	35	125	Low
6	7	Female	25	120	Low
7	8	Female	27	120	Low

The taking history of the seven patients were done by asking the parents. The chief complaints were same, and the parents said that their children consume vegetables and fruit rarely. Patients did not have any systemic disease and any hereditary disease. Patients said that the aggravating factors were while speaking or opening the mouth and eating. The pain will be reduced after drinking the cold water. The intra oral examination was conducted and it shows different characteristics of angular cheilitis between patients (table 2). The clinical signs of angular cheilitis were vary and mostly were fissured shape.

Table 3. Clinical signs of angular cheilitis

Patient	Clinical signs
1	The lesions are characterized by the presence of fissures, broken at the corners of the lips, white in color, and a feeling of dryness at the corners of the mouth.
2	The lesions are characterized by cracks in the corners of the lips that are pale red in color and are accompanied by burning, pain and a feeling of dryness in the corners of the mouth.
3	Lesions characterized by cracks in the corners of the lips are reddish in color accompanied by a feeling of burning, pain, and dryness in the corners of the mouth.
4	The deep fissure-shaped lesion is at the corner of the mouth, reddish in color with a burning, painful and dry feeling at the corner of the mouth
5	Lesions on the corners of the lips that are reddish in color with burning and pain in the corners of the mouth.
6	Lesions at the corners of the lips that are shaped like white fissures and are accompanied by burning pain and dryness at the corners of the mouth
7	Lesions on the corners of the lips that are reddish in color and accompanied by a feeling of burning and dryness at the corners of the lips.



Fig 1. Patient 1



Fig 2. Patient 2



Fig 3. Patient 3



Fig 4. Patient 4



Fig 5. Patient 5



Fig 6. Patient 6



Fig 7. Patient 7

Figure 1-7. Angular cheilitis in children's patients

CASE MANAGEMENT

Based on the examination that has been done, the diagnosis for this patient was angular cheilitis on both sides of the left and right lips. The dentist had explained to the patient and the patient's parents about malnutrition can cause Angular cheilitis, therefore it is necessary to eat nutritious food. In addition, the patient was given milk to consume at home and prescribed multivitamin

supplements (vitamin B complex in syrup) and prescribed nystatin topically.

The seven children patient was referred to check the blood including hemoglobin, erythrocyte sedimentation rate (ESR), erythrocyte, and thrombocyte. In the second visit, their parents came to RSGM Baiturrahmah with the blood test results (table 4).

Table 4. Body mass index (BMI) and blood test results

Patient	BMI	Blood test				
		Hemoglobi	Leucocyt	ESR	Erythrocyt	Thrombocyte
1	15	12,1 gr%	7.500 mm	15 mm/h	4.280.000 m	375.000 mm ³
2	10	12,7 gr%	7.000 mm	30 mm/h	4.300.000 m	323.000 mm ³
3	9	11,9 gr%	12.700 mm	17 mm/h	4.740.000 m	428.000 mm ³
4	14,2	12,2 gr%	7.900 mm	10 mm/h	4.440.000 m	333.000 mm ³
5	14,5	NA	NA	NA	NA	NA
6	10,4	NA	NA	NA	NA	NA
7	11,5	11,3 gr%	7.900 mm	8,5 mm/h	3.960.000 m	321.000 mm ³

Table 4 shows the body mass index of all patients were underweight (lower than 18.5). The calculation of BMI is important the health and wellbeing. The low BMI indicated malnutrition or certain health problem. The hemoglobin of five patients were good. The level of leucocyte, erythrocyte and thrombocyte was also normal.

In the second visit, we evaluated the intraoral and extraoral conditions. The intraoral condition showed no new lesion and the extraoral assessment showed that the angular cheilitis has healed and did not leave scar tissue.

DISCUSSIONS

Angular cheilitis is the inflammation at the corners of the lips and mouth which usually starts with irregularities at mucocutaneous and progresses to the skin. Angular cheilitis is described by widespread inflammation, fissure-like appearance, eroded skin, and a burning feeling. Early symptoms of angular cheilitis were itching in the angles of the mouth and observable presence of reddened skin and inflamed spots. At first, this is not dangerous, and it will sense soreness in the corners of the oral and bleed easily from mouth activities such as laughing or speaking. The severity of this inflammation is characterized by cracking of the

corners of the mouth and some bleeding when the mouth is opened.^{1,4,9}

The diagnosis in these seven cases is based on clinical examination. There were several differences between the patients. The crack in the corner of the lips were found in patient 2 and patient 3. The fissure appearance was found in patient 1, patient 4 and patient 6 and the reddish on the corner of the mouth was found in patient 5 and patient 7. In general, Angular cheilitis has the main symptoms of dry lips, discomfort, the presence of scales and the formation of fissures (gaps) followed by a burning feeling in the corners of the mouth. Most often as areas of erythema and edema that are triangular on both commissures or can be atrophic, erythema, ulcers, crusting and shedding of the skin until repeated exudation occurs. Long-term reactions, suppuration and granulation tissue occur.⁴

The symptoms of angular cheilitis include bleeding, blisters, cracking, crusting, maceration (soggy, lighter-colored skin), redness, and swelling.^{4,6} The symptoms can be painful and can vary from mild redness to open, bleeding blisters. Other symptoms of angular cheilitis can include oral yeast infection (thrush), eczema-type rash on the lower face, redness on the palate of the mouth (in denture wearers), saliva at the corners of the mouth, and deep cracks (called fissures).⁵ Angular cheilitis is usually diagnosed by a primary healthcare provider or a dermatologist.⁹

The etiology of Angular cheilitis includes candidiasis, trauma, dentures, nutritional status of children, manifestations of various systemic diseases, viral infections. In the nutritional status of children, the most prominent cause of angular cheilitis in children is malnutrition.^{4,8} The report showed that seven children have low BMI and it could be one of the incidence cause of angular cheilitis. Angular cheilitis can be induced by iron deficiency anemia. Iron-replacement therapy for patients with iron-deficiency anemia has been shown to cause significant regression of angular cheilitis.⁹ Nutritional deficiency, including iron deficiency, has been linked to angular cheilitis.¹⁰

Iron deficiency should be considered as part of the differential diagnosis whenever angular cheilitis is encountered, especially in women of child-bearing age.¹⁰ It is important to note that angular cheilitis can have multiple causes, and iron deficiency anemia is just one of them. If the patient has angular cheilitis or iron deficiency anemia, it is recommended to consult with a healthcare professional for proper diagnosis and treatment.

In simple terms, the meaning of nutrition can be explained, namely all the intake needed for the body to be healthy. Nutrition is needed by the human body for brain intelligence and physical abilities. Nutrition is obtained from the intake of foods that contain carbohydrates, proteins, fats,

vitamins and minerals.^{8,11} Malnutrition is a cause of angular cheilitis. Lack of vitamin B-2 (riboflavin), vitamin B-3 (niacin), vitamin B-6 (pyridoxine), or vitamin B-12 (cyanocobalamin) and iron deficiency can cause a child to experience angular cheilitis.¹²

In causing angular cheilitis, every etiological factor, especially nutritional insufficiencies, is correlated with environmental conditions. The most significant are environmental conditions in the family and at school. The environmental conditions can be in the form of the socio-economic level of the family, the influence of customs in the family, eating habits or patterns and awareness of nutrition.^{4,8,13,14}

In general, angular cheilitis associated with nutritional deficiencies, can be seen thinning of the tongue papilla due to iron deficiency. Red and shiny tongue in patients with folic acid deficiency, or purple-purple tongue in vitamin B deficiency. Angular cheilitis accompanied by alopecia, diarrhea, and non-specific oral ulceration, usually on the tongue and buccal mucosa, can be suspected due to zinc deficiency. The lesions are bilateral and usually extend a few millimeter from the corner of the mouth to the cheek mucosa and 1-10 mm laterally on the skin of the oral cavity. At the base of the valley lesion, there is a sharp, vertical fissure from the vermilion margin of the lip and adjacent skin area.^{8,15}

Clinically, the epithelium in the commissures appears shriveled and slightly injured. As it contracted, it becomes more pronounced, forms one or more deep fissures, ulcerates but does not tend to bleed. Although there may be a purulent crust on the surface, this fissure involves the mucosal surface of the commissures in the mouth, but terminates at the junctional mucocutaneous.⁴

In addition to economic factors, people's lack of knowledge about good nutrition can lead to a lack of quality of their nutritional intake, people do not understand how to choose good quality food at low prices that can be consumed. In the patient's condition, the operator explained that malnutrition could cause Angular cheilitis, and explained to the patient's parents that it was necessary to eat nutritious food.

At the beginning of the age of entering school, thus children begin to enter a new setting, where they begin to have a lot of contact with people outside their family. This can affect their eating habits. New experiences, the joys of school, cause children to deviate from the mealtime habits that their parents have given them.

The differential diagnosis Angular cheilitis is herpes labialis which is a disease caused by the herpes simplex virus 1 and is characterized by vesicular eruptions on the skin near or on the red edges of the lips. Herpes labialis begins with itching at the affected site. There is prodromal

paresthesia or burning sensation. Then there is erythema at the affected site.¹⁶

In addition to explaining to patients and their parents about the importance of eating nutritious food, supplementing with vitamin B complex can reduce the incidence of angular cheilitis. Vitamin B complex primarily functions to help prevent growth retardation, anemia, visual disturbances, nerve damage and heart problems. It is recommended to consume food ingredients that are sources of B-complex vitamins, for example: bread, grains, beans, liver, meat, fish, eggs and milk.¹⁷ In this case it was reported in 7 patients who came to RSGM who experienced cracks in both corners of the lips, redness, accompanied by burning, pain and dryness. Based on the statement of the patient's parents, it is very rare to consume fruits and vegetables. Based on the results of the examination of body weight and height, according to the nutritional status table for Indonesians, the patient is included in the category of severe underweight with a very thin nutritional status. Body mass index analysis showed that all patients were in the underweight category (9-14).

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